	=		_
		ı	RИI
8	Ш	m	RM i
_			ል~
\supseteq			_1
Ø			:
\simeq			Ø

FRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US)

CONCERNING A FILING UNDER 35 U.S.C. 371

ATTORNEY'S DOCKET NUMBER IM-1185

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)

RNATIONAL APPLICATION NO. PCT/EP99/00758

INTERNATIONAL FILING DATE 5 FEBRUARY 1999 (05.02.99) PRIORITY DATE CLAIMED 20 FEBRUARY 1998 (20.02.98)

TITLE OF INVENTION

APPARATUS AND METHOD FOR CUTTING OF A WEB, FEEDING IT INTO A PROCESSING LINE AND THREADING IT UP THROUGH THAT LINE

APPLICANT(S) FOR DO/EO/US PETITJEAN, Gilles et al. Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. This is an express request to being national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination 3. \square until the expiration of the applicable time limit set in 35 U.S.C. 371(b)) and PCT Articles 22 and 39(1). 4. A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. \square 5. A copy of the International Application was filed (35 U.S.C. 371 (c) (2)) is transmitted herewith (required only if not transmitted by the International Bureau. has been transmitted by the International Bureau. b. is not required, as the application was filed in the United States Receiving Office (RO/US) A translation of the International Application into English (35 U.S.C. 371 (c) (2)). 7. A copy of the International Search Report (PCT/ISA/210). Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c) (3)) are transmitted herewith (required only if not transmitted by the International Bureau). b. 図 have been transmitted by the International Bureau. have not been made; however, the time limit for making such amendments has NOT expired. d. have not been made and will not be made. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)). 10. An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). 11. \square A copy of the International Preliminary Examination Report (PCT/IPEA/409) 12. A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). Items 13 to 18 below concern document(s) or information included: 13. An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 14. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 15. A FIRST preliminary amendment. A SECOND or SUBSEQUENT preliminary amendment. 16. A substitute specification. 17. M A change of power of attorney and/or address letter. 18. \square Certificate of Mailing by Express Mail. 19. Other items or information: 17. General Power of Attorney 18. Express Mailing Label No.: EL031053476US

1	APPLICATION NO. (IF KNOWN, SEE 37 CFR) INTERNATIONAL APPLICATION NO. ATTO PCT/EP99/00758							RNEY'S DOCKET NUMBER IM-1185			
20. The following fees are submitted								CALCULATIONS PTO USE ONLY			
	BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) – (5)):										
ł	✓ Search Report has been prepared by the EPO or JPO \$840.00								340.00		
		International prelim	ninary examinati	on fee pa	id to USPTO	(37 CFR 1.48	32)	\$6	670.00		
١		No international pro	eliminary examii	nation fee	paid to USP	TO (37 CFR	1.482)			
l	No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) \$760.00								760.00		
	Neither international preliminary examination fee paid to USPTO (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$970.00										
	International preliminary examination fee paid to USPTO (37 CFR 1.482) And all claims satisfied provisions of PCT Article 33(2)-(4) \$ 96.00										
		ENTI	ER APPRO	PRIAT	E BASIC	FEE AM	IOU	NT	=	\$840.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)).											
		CLAIMS	NUMBER F	ILED	NUMBER	REXTRA		RATE			
100		Claims		20 =			х		3.00	\$108.00	
0.00		endent Claims	L	3 =		; 	x		3.00	\$0.00	
201 201 201	Multi	ple Dependent Cla							<u> </u>	\$0.00	
¥45			TOTAL	OF A	BOVE C	ALCULA	TIO	NS	=	\$108.00	
ali Mater In		ction of ½ for filing also be filed (Note					y State	ement		\$0.00	
mark Sy						SUB'	ГОТ	AL	=	\$108.00	
Sector 19		essing Fee of \$130.0 hs from the earliest						20	30	\$0.00	
				·	TOTAL N	NATION	AL F	EE	=	\$1,078.00	
		or recording the en- npanied by an appr								\$0.00	
				T	OTAL FE	ES ENC	LOS	ED	=	\$1,078.00	
										Amount to be : refunded	\$
ļ										Charged	\$
-		A check in the	e amount of		to	cover the ab	ove fe	es enclosed	i.		
	Please charge my Deposit Account No. 04-1928 in the amount of \$1,078.00 to cover the above fees.										
	The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment										
ļ	to Deposit Account No. 04-1928 a duplicate copy of this sheet is enclosed.										
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (CFR 1.37(a) or (b)) must be filed and granted to restore the application to pending status.											
	SEND ALL CORRESPONDENCE TO: (Reg. No. 33, 605)										
ANDREW G. GOLIAN E. I. DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER Manuel J. Achoeffer For Andrew G. Golian SIGNATURE Andrew L. Schaeffer for ANDREW G. GOLIAN											
	V	007 MARKET ST VILMINGTON, DI	ELAWARE 198	98		NAME	,		2	5,293	
	ן י	INITED STATES	OF AMERICA			REGIS	TRA	TION NUM		-,	
									GUST 2000		
	DATE										

WO 99/42394

1

APPARATUS AND METHOD FOR CUTTING OF A WEB, FEEDING IT INTO A PROCESSING LINE AND THREADING IT UP THROUGH THAT LINE

5 FIELD OF THE INVENTION

The invention relates to an apparatus and a method for cutting of a web, feeding it into a processing line, such as a winding unit, and threading it up through that line.

10 BACKGROUND OF THE INVENTION

The feeding of the webs into a processing line, such as a winding system, after a start/restart of the production is a delicate process in particular for thin webs. A known method for such feeding is to cut off manually an edge or a leader of the web, to take it manually through the processing line, launching a defined start program, and when the edge or the leader is secured on a driving element, to cut the web in such a way that the entirety thereof is finally fed into the processing line.

20

25

35

15

It will be readily apparent that there is a need for an apparatus and a method that would offer a safe and easy cutting and feeding of the web into the processing line, and that would afford automatic thread up. This need is acute for films with thickness ranging from 100 to 0.4 microns and speeds up to 1000 m/min as well as widths ranging from 1 m to 10 m.

Said need exists for various types of material: 30 polymeric, paper, metallic, etc. "Web" shall thus cover any of this material.

The method of the leader (either manually or automatically) is already known and exemplified in, e.g., United States patent 3,756,527 and 3,743,197. These patents teach the use of a single central leader strip that is inserted into the processing line; once said leader strip is secured the strip is broadened up to the full

CONFIRMATION COPY

width of the web. The leader strip is transported pneumatically using a slotted tube. This, however, presents drawbacks. Because of the slots, it is not possible to build up a significant pressure gradient along the tube or channel; air speeds and consequently aerodynamic forces are limited. Pulling the leader strip out of the slots is a delicate operation, often ending in breaks with thin films. The tubes hinder the production because centrally located, along the whole line.

10

15

20

25

An alternate method using the edges present on both sides of the film or web is disclosed in United States patent 4,611,518. According to this document, the method makes use of said edges being first cut from the central part of the web, then fed into the processing line. mechanism used for achieving this comprises pressure rolls, constituting a nip, which secures the edges, where the edges are then transported by a double belt (called rope scissors) through the machine. This, however, presents drawbacks. The edges can wrap around the pressure rolls, leading to downtime. The system is very complicated. Edge transport with pressure rolls and with a double belt is not convenient in the case of stretched polymeric films because the edge (aka bead) has then a non uniform thickness and may be corrugated and curled (as a result, the edge can get out sidewards).

SUMMARY OF THE INVENTION

The object of the present invention is to provide an apparatus and a method for cutting and feeding a web in an appropriate manner for reliable automatic feeding and threading up in a processing line, such as in a winding system, thereby reducing the rate of failure and hence the production costs.

35

30

The invention thus provides an apparatus for cutting of a web (1) conveyed along a conveyance direction (F), and subsequent feeding and threading it up into a processing

from state and more more on a state count from boun cons. or state from the first than the first

j nik

30

5

10

line, said web (1) comprising a central portion (1c) and edges (1a, 1b),

said apparatus comprising central cutting means (2a, 2b) for cutting the central portion (1c) laterally and transversely to the conveyance direction (F) and edge cutting means (3a, 3b) for cutting the edges (1a, 1b) transversely to the conveyance direction (F),

said apparatus further comprising at least one edge channel (4a, 4b) for taking up the edge(s) (1a, 1b) into the processing line and threading it(them) through that processing line, said channel(s) showing a section substantially closed and said channel(s) comprising movable lids (6a, 7a, 6b, 7b).

According to one embodiment, the edge channel(s) (4a, 4b) comprise(s) rotatably mounted inner and/or bottom plate (6a, 7a, 6b, 7b) for taking up and releasing the edges (1a, 1b).

According to another embodiment, the edge channel(s) (4a, 4b) is(are) provided with pneumatically driven suction means.

According to yet another embodiment, the edge channel(s) (4a, 4b) is(are) divided into sub-sections.

According to yet another embodiment, the edge channel(s) (4a, 4b) and the corresponding edge cutting means (3a, 3b) are mounted jointly, such as on a carriage (8a, 8b).

According to yet another embodiment, the apparatus comprises two edge channels (4a, 4b).

According to yet another embodiment, the edge cutting means (3a, 3b) comprise knife means for cutting off the edges (1a, 1b). This knife means may be guillotine knifes or shears knifes.

20

25

30

According to yet another embodiment, the central cutting means (2a, 2b) are mounted to adopt a non-moving state for lateral cutting off the edges (1a, 1b) from the central portion (1c) and a moving state for transversely cutting the central portion (1c) while moving towards each other transversely to the conveyance direction (F).

According to yet another embodiment, the cutting means 10 (3a, 3b) are arranged downstream with respect to the cutting means (2a, 2b).

According to yet another embodiment, the cutting means (3a, 3b) are arranged upstream with respect to the edge channel(s) (4a, 4b).

According to yet another embodiment, the cutting means (3a, 3b) are arranged downstream with respect to the edge channel(s) (4a, 4b).

"Processing line" includes one or several machines such as stretchers, coaters, dryers, surface treating machines, slitters, winders, etc., usually with very complicated film paths. A winding unit will receive the invention with advantage.

The invention also provides a method for cutting a web (1) conveyed along a conveyance direction (F), and subsequent feeding and threading it up into a processing line, said web (1) comprising a central portion (1c) and edges (1a, 1b),

the method comprising the steps of :

- (i) cutting off at least one edge (1a, 1b) laterally from the central portion (1c);
- 35 (ii) cutting said at least one edge (1a, 1b) along a direction transverse to the conveyance direction (F);
 - (iii) taking up said at least one edge into the
 processing line through edge channel(s);

- (iv) securing said at least one edge in a pulling unit located at the other extremity of the processing line;
- (v) opening the channel(s) to release said at least one
 edge; and
- 5 (vi) cutting the central portion (1c).

35

According to one embodiment, the taking up step (iii) comprises sucking the edges into tube channels (4a, 4b).

According to another embodiment, the method further comprises the step of forming a loop of edges at the vicinity of the edge channel during step (ii).

According to yet another embodiment, both edges are processed; said both edges can be processed simultaneously or they can be processed independently or they can be processed sequentially.

According to yet another embodiment, the cutting step 20 (i) comprises a step of keeping the central cutting means (2a, 2b) at a non-moving state for lateral cutting off the edges (1a, 1b) from the central portion (1c).

According to yet another embodiment, the cutting step (ii) comprises a step of instantaneous transversely cutting of the edges (la, lb).

According to yet another embodiment, the cutting step (vi) comprises moving the central cutting means (2a, 2b) towards each other transversely to the conveyance direction (F).

According to yet another embodiment, the method of the invention uses the apparatus of the invention.

The invention finally provides an edge channel (4a, 4b) showing a section substantially closed and comprising movable lids (6a, 7a, 6b, 7b).

According to one embodiment, the edge channel (4a, 4b) comprises rotatably mounted inner and/or bottom plate (6a, 7a, 6b, 7b).

According to another embodiment, the edge channel (4a, 4b) comprises air jets arranged along it.

The advantage of the apparatus and the method according to the present invention lies in the separated handling of the edges and the central portion of the web for the cutting procedure and feeding procedure, allowing appropriate (automatic) feeding of the web into the processing line, handling of the edges being carried out thanks to specific channels.

15

20

35

10

Vitalian State of Sta

ij.

The invention allows the drawbacks of the prior art to be overcome, is not limited in terms of thickness or speed and show high reliability hence low downtime. The invention makes use of the fact that edges, in case of polymeric films, are much stronger then the central part between them and thus break very seldom. If the web breaks during processing, the edges or only one of them will then automatically re-entrain the web.

25 The edges are known by-products of the manufacturing procedure of the web and distinguish from the central portion by their higher thickness (allowing handling of the web). The invention proposes to cut these two different components of the web in distinct steps by appropriate 30 means to allow for a different treatment of the components in the later feeding procedure.

Preferably the different cutting treatment of edges and central portion leads to a shape of the transverse cut of the web in such a way that the edges protrude in the conveyance direction. The edges, since they can be better handed, can be fed first into a pulling device or system

located at the other extremity of the processing line to entrain afterwards the central portion.

Further, it is possible to use cutting means different in shape and operating procedure for the thin central portion and the thick edges. For instance, guillotine knifes and shears knifes are known as reliable tools for cutting thick but small workpieces and thus are adapted for cutting the edges. For the central portion extending in general over a considerable width, other cutting means transversely movable are more appropriate, such as a Gillette knife or a doctor blade or sharpened needles.

BRIEF DESCRIPTION OF THE DRAWINGS

10

15

25

30

35

The state of the s

In the following, the edge channels will be represented with dotted lines for hidden parts at the first occurrence only in each embodiment.

Figures 1a and 1b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, the web not being cut at all;

Figures 2a and 2b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, the edges being cut off laterally from the central portion of the web;

Figures 3a and 3b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, the edges being cut off transversely;

Figures 4a and 4b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, the edges being taken up by the edge channels;

Figures 5a and 5b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, the edges being secured in the pulling device and the channels in open position;

Figures 6a and 6b show a perspective view and a top view, respectively, of an apparatus according to one

embodiment of the invention, the central portion being cut transversely;

Figures 7a and 7b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, the central portion being cut transversely up to the meeting point in the middle of the central part, and the central portion being taken in by the edge channels and fed to the processing line;

Figures 8a and 8b show a perspective view and a top view, respectively, of an apparatus according to another embodiment of the invention, the web not being cut at all;

10

15

25

30

35

Figures 9a and 9b show a perspective view and a top view, respectively, of an apparatus according to another embodiment of the invention, one edge being cut off laterally from the central portion of the web;

Figures 10a and 10b show a perspective view and a top view, respectively, of an apparatus according to another embodiment of the invention, where the edge channels are activated and the shears knife are also activated, for one given edge, whereby said edge forms a loop within the respective edge channel;

Figure 11a and 11b show a perspective view and a top view, respectively, of an apparatus according to one embodiment of the invention, one edge being taken up by one edge channel;

Figure 12a and 12b show a perspective view and a top view, respectively, of an apparatus according to another embodiment of the invention, the one edge being taken up by the edge channels and secured in the pulling device;

Figures 13a, 13b to 16a, 16b correspond to figures 9a, 9b to 12a, 12b, respectively, for the other edge;

Figure 17a and 17b show a perspective view and a top view, respectively, of an apparatus according to another embodiment of the invention, the central portion being cut transversely;

Figure 18a and 18b show a perspective view and a top view, respectively, of an apparatus according to another embodiment of the invention, the central portion being

1000

10

15

25

30

35

taken in by the edge channels and fed to the processing line;

Figure 19 shows a cross-sectional view of a preferred edge channels in the form of a edge channel with rotatable half-part.

DETAILED DESCRIPTION OF THE INVENTION

The description is given with respect to a web transfer an winding system following an oven or a stretcher but can be applied to any web processing line. Also, the web is here polymeric, (e.g. polyester such as PET), with thickened edges (aka beads), by comparizon with the remaining web. The blades are arranged in such a way that the central portion, once cut, shows a uniform thickness.

First embodiment.

In the apparatus according to the invention as shown in Figs. 1a and 1b a web 1 is conveyed in a conveyance direction indicated by arrow F at the exit of an oven or stretcher (not shown). The web is composed of two edges la and 1b defining therebetween a central portion 1c of the web 1. On its way along conveyance direction F the web 1 passes a central cutting means comprising two sharpened blades 2a, 2b. In the initial condition shown in Figs 1a and 1b the blades are in a lower position not cutting the web. Downstream in the conveyance direction F edge cutting means in the form of two guillotine knifes 3a, 3b are mounted over each of the edges. In the present initial condition the guillotine knifes are in a stand-by state not cutting the edges la, 1b. Further downstream, edge channels 4a, 4b are placed in close vicinity of the transport roll towards the chute 5 to take up the edges 1a, 1b after cutting by the edge cutting means 3a, 3b. channels 4a, 4b are not activated in the initial condition shown in Figs. 1a and 1b and the entire web 1 is falling into the container or chute 5.

In operation the apparatus according to the first embodiment functions as follows:

At a given moment t0, as can be seen from figs. 2a and 2b, the blades 2a, 2b are lifted to a position where they protrude through the web between the edges and the central portion thus cutting the web into said central portion 1c and the two edges 1a and 1b. In this position the blades are not moved in the plane of the web, therefore being in a non-moving state. Downstream of the blades the central portion and the separated edges continue to fall in the container 5.

At a selected moment t1 _ t0, as can be seen from figs. 3a and 3b, the edges 1a, 1b are cut laterally by the edge cutting means 3a, 3b. The cut is performed instantaneously by the two guillotine knifes 3a and 3b, which are retracted immediately after cutting. The cutting is transverse to the conveyance direction F, preferably perpendicular to it.

20

25

30

15

5

10

At a further moment t2 _ t1, as can be seen from figs. 4a and 4b, the edge channels 4a and 4b are activated to take up the cut edges. At this time the central portion 1c of the web continues to fall into the container 5, whereas the cut edges 1a, 1b are taken into edge channels. The edge channels are "activated" in that sense that suction is initiated, e.g. through sucking means such as air jets arranged along the edge channels. Activation of the edge channels is initiated at a time t2 close to t1, such that the edges that will be taken up are that part of the edges that exit from the oven or stretcher (and not that part falling into the chute).

At a moment t3 _ t2, as can be seen from figs. 5a and 35 5b, the edges are securely fed into the edge channels, or preferably are securely fed into a pulling unit situated at the other extremity of the processing line (not shown). At that time when the edges are secured in the pulling unit,

10 i indi 1

15

20

25

30

35

one could be sure that the edges will then efficiently perform their role of "entrainer", i.e. they will entrain the central part of the web into the winding unit. At that time, the lids of the edge channels are open, releasing the edges. The edge channels are represented on the figs. without the bottom and inner parts thereof for the sake of understanding, representing the "open position" or "releasing position" of the channels. The edges may then "fall" on another film path, situated below the channels, such as the film path of the processing line from which the web will be further handed.

At a moment t3' t3, the channels may be retracted, if necessary, e.g. to allow the processing line to freely operate.

At a moment t4 $_$ t3, as can be seen from figs. 6a and 6b, the blades 2a, 2b start moving along line E in the plane of the web towards each other, in the instant case towards the center of the web, thereby cutting the central portion 1c transversely. The blades 2a, 2b are caused to move transversely to the web conveyance direction at a time where the lids of the channels are open, so as to allow the central part to be entrained between the edges. attached V-shaped central portion 1c is then fed into the winding unit thanks to the protruding edges 1a, 1b, since these have been secured in the winding unit (e.g. through a driving roll acting as pulling device, not shown), and can securely entrain the central part of the web into the winding unit.

At the moment of arrival of both blades in the center of the web, as can be seen from figs. 7a and 7b, the blades are withdrawn in position below the web to achieve a noncutting state preventing further cutting of the central The blades are then moved to their initial position below the web near the edges. The result of the operation of the blades 2a, 2b leads to a V-shaped transverse cut of the central part while the edges protrude in conveyance direction F. The angles have been exaggerated for sake of understanding; given the speed of the line, the angle of the cut piece shall be very acute. In that configuration, it shall be understood that the steps represented figures 6 and 7 will be somehow "fused" together.

The edge cutting means and the central cutting means can be placed along the same line perpendicular to the conveyance direction, or they can be placed at different locations, preferably the edge cutting means (guillotine knifes 3a, 3b) are located downstream with respect to the central part cutting means (blades 2a, 2b). The guillotine knifes (3a, 3b) are preferably placed upstream with respect to the edge channels.

The sequence of the cutting and taking up steps and hence the moments in time t0, t1, t2, t3 and t4 can be varied, as will be appreciated by the skilled man. example, activation of the guillotine knifes preferably be such that the latter be activated at a point of time where the web passing at the location of the quillotine knifes is already cut by the blades into its central part and its edges. Activation of the guillotine knifes and the edge channels may be coupled, i.e. they can be activated at the same time or at times separated by a set time-period. The moving of the blades 2a, 2b, for transverse cutting of the central portion, may be commanded by the activation (opening) of the lids of the edge channels, optionally after a set time-period. Also, preferably, the activation of the blades should be commanded by the detection of the secured feeding of the edges into the pulling device.

35

10

Hand the state of the state of

1

20

25

30

It is also possible to proceed with one edge at a time. In that case, one edge will be first secured in the pulling device, the lid of the first channel will be open, then the

second edge will be secured in the pulling device, and only by then the blades 2a and 2b will be moved towards each other. It is also possible to proceed with one edge only.

PCT/EP99/00758

5 Second embodiment (and best mode).

The second embodiment is given with respect to that embodiment where each edge is handled separately. Of course, the second embodiment can be worked out with both edges handled simultaneously.

10

100

And him

113

H

13

20

25

30

In the apparatus according to the invention as shown in Figs. 8a and 8b a web 1 is as in the first embodiment. On its way along conveyance direction F the web 1 passes a central cutting means comprising two sharpened blades 2a, 2b. In the initial condition shown in Figs 8a and 8b the blades are in a lower position not cutting the web. Downstream in the conveyance direction F, in the vicinity of the roll diverting the web into the chute 5, are located edge channels 4a, 4b and further downstream are located the edge cutting means in the form of two shears 3a, 3b. the second embodiment, the edge channels and the shears are mounted jointly through a carriage 8a, 8b. The carriage 8a, 8b, allows for a well-defined placement of the edge channels with respect to the exiting web, in all three directions. The carriage 8a, 8b, will only be represented in fig. 8a and 8b, and will not be represented in the following. In the present initial condition the shears are in a stand-by state (open position) not cutting the edges 1a, 1b. The edge channels 4a, 4b are not activated in the initial condition shown in Figs. 8a and 8b and the entire web 1 is falling into the container or chute, which will no longer be represented in the figures in relation with the second embodiment.

In operation the apparatus according to the second embodiment functions as follows:

At a given moment t0a, as can be seen from figs. 9a and 9b, the blade 2a is lifted to a position where it protrudes through the web between the edge and the central portion thus cutting the web into said central portion 1c and one edge 1a. In this position the blade is not moved in the plane of the web, therefore being in a non-moving state. Downstream of the blade the central portion and the separated edge continue to fall into the container 5.

10

2 222

i uit

20

25

30

35

At a moment tla _ t0a, as can be seen from figs. 10a and 10b, the edge la is cut laterally by the shears 3a. The cutting is not performed instantaneously as in the first embodiment, but will have a duration until moment t2a. During that interval of time (t2a - t1a), the edge is "blocked" at the shears level, and since the film is still coming out from the oven or stretcher, a loop will build up with the incoming edge. The channel being activated, e.g. by suction means (not represented), the loop will form into the channel. The loop is represented by the dotted line and may extend into the channel by a distance that can be varied up to one meter or less or more. For example, (t2a - t1a) can be about 0.1 s, the speed of the film can be 5 m/s, thus the loop will have a length of 0.25 m. The suction means are not represented here but are conventional (see first embodiment).

At a moment t2a _ t1a, as can be seen from figs. 11a and 11b, the edge 1a is finally cut by the shears 3a. The edge channel takes up (here sucks) the cut edge 1a. At this time the central portion 1c of the web and the edge 1b to which it is still attached continue to fall into the container 5. The edge channel is "activated" in the same sense as above (activation may be varied or not during transport of the edge). The edge 1a is then secured in the pulling device (not shown) or any other equivalent means of the driving unit.

At a further moment t3a _ t2a, as can be seen from figs. 12a and 12b, the lids of the edge channel 4a are open, releasing the edge; in fact the bottom and inner parts of the edge channels are not represented for the sake of understanding; further details can be seen on fig. 19. As in the first embodiment, the edge may "fall" onto another film path, and the channel 4a may be retracted.

The same sequence as above is then initiated for the other edge, at varying times t0b, t1b, t2b, t3b and t4b, and is illustrated in figures 13a to 16b. At the end of the second sequence, the situation is the following: the two edges are transported through the processing line and secured in a pulling device situated at the other extremity, and they are ready to perform their role of entrainer.

It should be noted that the lids of the channel 4a can be open before the sequence for edge 1b starts, or it can be open after the sequence is completed, e.g. simultaneously with the lid of channel 1b. Also, the channels may be retracted if needed by the operation of the processing line (transport rolls to be moved at given positions, etc.).

25

30

35

10

15

20

į.

At a moment t5 _ t4a/t4b, as can be seen from figs. 17a and 17b, the blade 2b starts moving along line E in the plane of the web towards blade 2a, thus creating a movement of the blades towards each other, thereby cutting the central portion 1c transversely. The blade 2b is caused to move transversely to the web conveyance direction at a time where both edge channels are open. The open state is of course required for allowing the central part of the film to be fed into the winding unit (otherwise the tube-like channels would prevent the central part from being conveyed).

blade 2a at the border of the central part of the web, as can be seen from figs. 18a and 18b, the blades are

In the moment of arrival of blade 2b at the location of

withdrawn in position below the web to achieve a noncutting state preventing further cutting of the central The blades are then moved to their portion. position below the web near the edges. The result of the operation of the blades 2a, 2b leads to a N-shaped transverse cut of the central part while the edges protrude in conveyance direction F. The attached N-shaped central 10 portion 1c is then fed into the processing line thanks to the protruding edges la, lb, acting as "entrainer". As indicated in the first embodiment, the angles have been exaggerated for sake of understanding; given the speed of the line, the angle of the cut piece shall be very acute. 15 In that configuration, it shall be understood that the steps represented figures 17 and 18 will be somehow "fused" : together.

i di

20

25

30

35

As shown, the edge cutting means (shears 3a, 3b) are located downstream with respect to the central part cutting means (blades 2a, 2b). The shears (3a, 3b) are also located downstream with respect to the edge channels.

The sequence of the cutting, loop formation and taking up steps and hence the moments in time t0, t1, t2, t3 etc. can be varied. In the embodiment shown in figs. 8a to 15b, the following sequences can be obtained. Activation of the shears, and consequently formation of the loop should preferably be such that the shears be activated at a point of time where the web passing at the location of the shears is already cut by the blades into its central part and its edges. Activation of the shears and the edge channels may be coupled, i.e. they can be activated at the same time or at times separated by set time-period. The moving of the blade 2a (2b), for transverse cutting of the central portion, may be commanded by the activation of selected units of the apparatus (shears 3a, 3b; detection of the

15

20

25

30

35

1 ...

5

secured feeding of said edges into the pulling device; opening of the lids of the channels; retraction of the channels), optionally after a set time-period, preferably at such time immediately before the processing line is in production mode.

The following sequence is also possible:

- edge la is first threaded up as described above;
- blade 2b is lifted up (nothing else occurs);
 - blade 2a moves towards blade 2b;
 - as soon as blade 2a reaches blade 2b, both blades (2a, 2b) are withdrawn and shears 3b are activated simultaneously. The web central part 1c will then entrain the edge 1b. Alternatively, shears 3b can be replaced with guillotine as in the first embodiment.

shows a cross-sectional view of the edge Fig. 19 channel. As shown, these edge channels (4a, 4b) can be equipped with a rotatably mounted side comprised of inner and bottom parts 6a, 7a and 6b, 7b, respectively, these rotatably mounted sides engaging/releasing the edges. Said rotatably mounted side can be either the inner part, the bottom part or both. In case the rotatably mounted side is the inner part 6a, 6b (facing each other), the edge channels will be converted into horizontal U-shaped guides, allowing the entire web to be driven between them. edge channels can then be retracted laterally. In case the rotatably mounted side is the bottom part 7a, 7b (facing down), the edge channels will be converted into vertical Ushaped guides (with the opening facing down), and in order for the web to be properly conveyed, it will fall at a position situated below the edge channels. channels can then be retracted upwards. Preferably, the rotatably sides may be comprised of both the inner and bottom parts of the edge channels. This latter embodiment is shown in fig. 19, where the dotted line represents the position where the inner and bottom parts are open. The

lids may also be comprised of three sides of the channel. Also, the movable lids may be moved by translation, instead of by rotation. The edge may thus get out upwards, downwards, sidewards or diagonally.

5

The channels are activated thanks to, e.g. air jets, pneumatically driven. The proper number of air jets is arranged along the channel. The channel need not be of one piece; it can comprise several sub-units which may be spaced or close each to the other. The air jets may be comprised of a Venturi tube arranged at the end of the channel. The Venturi is fed with pressurized air that will entrain ambient air at high speed through the channel, which ambient air will ultimately convey the edge.

15

25

30

35

The channel edges represented figs. la through 15b can be at a level within the conveyance direction F, or they can be oriented with respect to same, either upwards or downwards, and/or they can be shifted upwards or downwards with respect to the web plane. For example, the edge channels can form with the conveyance direction any angle (for from 15 to 30°), upwards, and can be shifted upwards (e.g. according to a vertical position) with respect to the Also, since the width of the web can be web plane. modified, the edge channels are preferably mounted on a carriage that will place them at the appropriate position to accommodate the width of the web, as described in figs. 8a to 14a. The carriage will also preferably carry the cutting knifes (3a, 3b) when the edge channels and the cutting knifes (e.g. the shears) are mounted jointly.

With a cutting means such as a high speed laser beam or pressurized water beam the placement with respect to the conveyance direction and within the apparatus and the sequence of the cutting steps can be modified appropriately.

While the description has been given with respect to specific embodiments (blades, guillotine, shears, scissors, edge channels), it is clear that the invention is not limited to these embodiments. Also, the two embodiments disclosed can be combined as far as one or more steps are concerned.

While the description has been given with respect to the handling of the two edges, it is clear that the invention can be worked out with only one edge. The skilled man will appreciate any adaptation of the above description to achieve the invention with one edge only.

The first will have been some the second to the second to

CLAIMS

- An apparatus for cutting of a web (1) conveyed along a conveyance direction (F), and subsequent feeding and threading it up into a processing line, said web (1) comprising a central portion (lc) and edges (la, 1b), said apparatus comprising central cutting means (2a, 2b) for cutting the central portion (1c) laterally transversely to the conveyance direction (F) and edge cutting means (3a, 3b) for cutting the edges (1a, 1b) 10 transversely to the conveyance direction (F), said apparatus further comprising at least one edge channel (4a, 4b) for taking up the edge(s) (1a, 1b) into the processing line and threading it(them) through that said channel(s) showing processing line, а substantially closed and said channel(s) comprising movable lids (6a, 7a, 6b, 7b).
 - 2. Apparatus for cutting and feeding a web (1) according to claim 1, wherein the edge channel(s) (4a, 4b) comprise(s) rotatably mounted inner and/or bottom plate (6a, 7a, 6b, 7b) for taking up and releasing the edges (1a, 1b).
- 25 3. Apparatus for cutting and feeding a web (1) according to claim 1 or 2, wherein the edge channel(s) (4a, 4b) is(are) provided with pneumatically driven suction means.
- 30 4. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 3, wherein the edge channel(s) (4a, 4b) is(are) divided into sub-sections.
- 5. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 4, wherein the edge channel(s) (4a, 4b) and the corresponding edge cutting means (3a, 3b) are mounted jointly.

- 6. Apparatus for cutting and feeding a web (1) according to claim 5, wherein the edge channel(s) (4a, 4b) and the edge cutting means (3a, 3b) are mounted jointly on a carriage (8a, 8b).
- 7. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 6, comprising two edge channels (4a, 4b).
- 10 8. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 7, wherein the edge cutting means (3a, 3b) comprise knife means for cutting off the edges (1a, 1b).
- 9. Apparatus for cutting and feeding a web (1) according to claim 8, wherein the knife means (3a, 3b) are guillotine knifes.
- 10. Apparatus for cutting and feeding a web (1) according to claim 8, wherein the knife means (3a, 3b) are shears knifes.
- 11. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 10, wherein the central cutting means (2a, 2b) are mounted to adopt a non-moving state for lateral cutting off the edges (1a, 1b) from the central portion (1c) and a moving state for transversely cutting the central portion (1c) while moving towards each other transversely to the conveyance direction (F).
 - 12. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 11, wherein the cutting means (3a, 3b) are arranged downstream with respect to the cutting means (2a, 2b).
 - 13. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 12, wherein the cutting means

(3a, 3b) are arranged upstream with respect to the edge channel(s) (4a, 4b).

- 14. Apparatus for cutting and feeding a web (1) according to any one of claims 1 to 12, wherein the cutting means (3a, 3b) are arranged downstream with respect to the edge channel(s) (4a, 4b).
- 15. A method for cutting a web (1) conveyed along a conveyance direction (F), and subsequent feeding and threading it up into a processing line, said web (1) comprising a central portion (1c) and edges (1a, 1b), the method comprising the steps of:
 - (i) cutting off at least one edge (la, lb) laterally from the central portion (lc);
 - (ii) cutting said at least one edge (1a, 1b) along a direction transverse to the conveyance direction (F);
 - (iii) taking up said at least one edge into the
 processing line through edge channel(s);
- 20 (iv) securing said at least one edge in a pulling unit located at the other extremity of the processing line;
 - (v) opening the channel(s) to release said at least one edge; and
 - (vi) cutting the central portion (lc).

25

- 16. Method for cutting and feeding a web (1) according to claim 15, wherein the taking up step (iii) comprises sucking the edges into tube channels (4a, 4b).
- 30 17. Method for cutting and feeding a web (1) according to claim 15 or 16, further comprising the step of forming a loop of edges at the vicinity of the edge channel during step (ii).
- 35 **18.** Method for cutting and feeding a web (1) according to any one of claims 15 to 17, wherein both edges are processed.

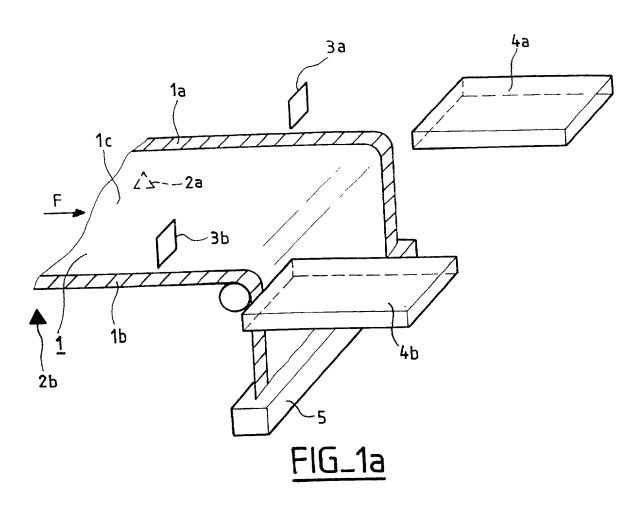
- 19. Method for cutting and feeding a web (1) according to claim 18, wherein said both edges are processed simultaneously.
- 5 **20.** Method for cutting and feeding a web (1) according to claim 18, wherein said both edges are processed independently.
- 21. Method for cutting and feeding a web (1) according to 10 claim 20, wherein said both edges are processed sequentially.

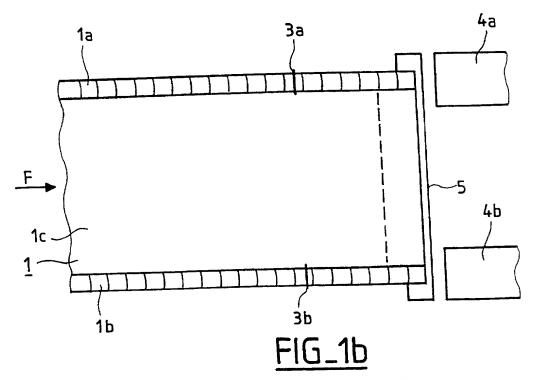
for South So

- 22. Method for cutting and feeding a web (1) according to any one of claims 15 to 21, wherein the cutting step (i) comprises a step of keeping the central cutting means (2a, 2b) at a non-moving state for lateral cutting off the edges (1a, 1b) from the central portion (1c).
- 23. Method for cutting and feeding a web (1) according to any one of claims 15 to 22, wherein the cutting step (ii) comprises a step of instantaneous transversely cutting of the edges (1a, 1b).
- 24. Method for cutting and feeding a web (1) according to any one of claims 15 to 23, wherein the cutting step (vi) comprises moving the central cutting means (2a, 2b) towards each other transversely to the conveyance direction (F).
- 25. Method for cutting and feeding a web (1) according to any one of claims 15 to 24, using the apparatus of any one of claims 1 to 14.
 - **26.** Edge channel (4a, 4b) showing a section substantially closed and comprising movable lids (6a, 7a, 6b, 7b).
 - 27. Edge channel (4a, 4b) according to claim 26, comprising rotatably mounted inner and/or bottom plate (6a, 7a, 6b, 7b).

28. Edge channel (4a, 4b) according to claim 26 or 27, comprising air jets arranged along it.

The first few was pure from the way that he was some the first few and the second seco



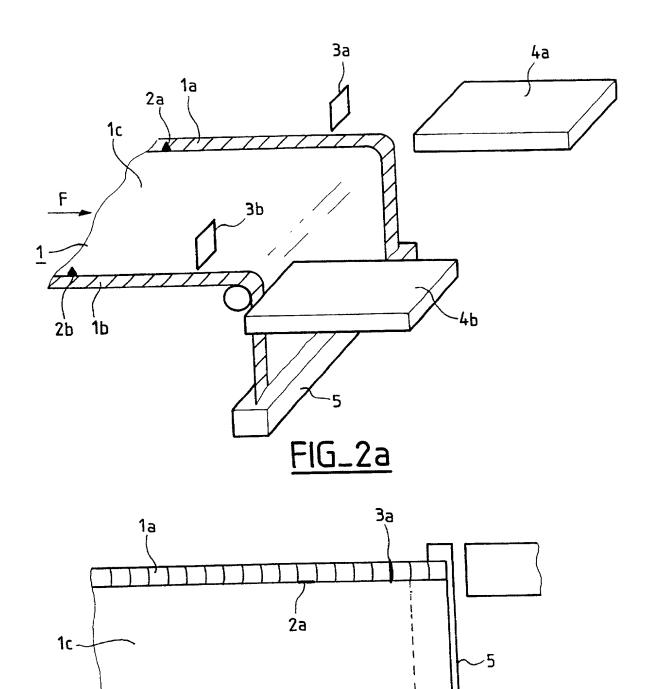


SUBSTITUTE SHEET (RULE 26)

1-

1b

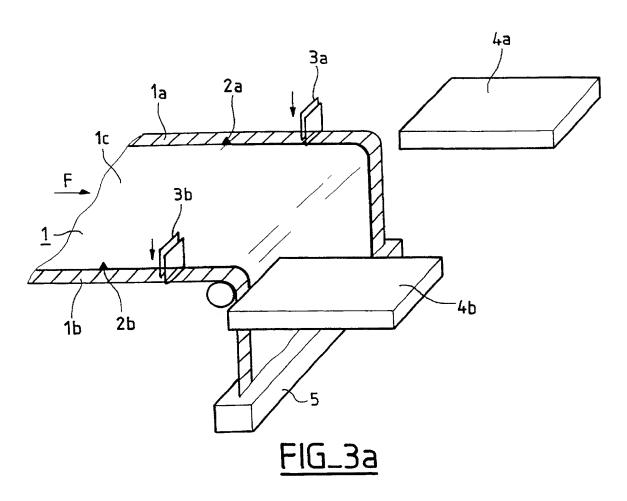


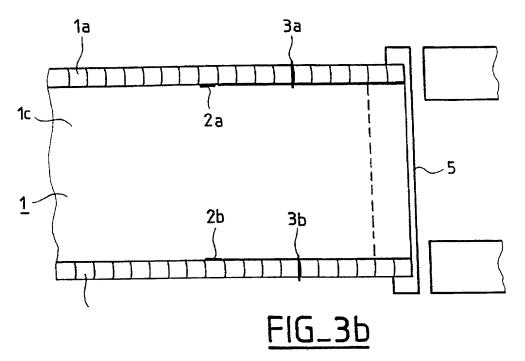


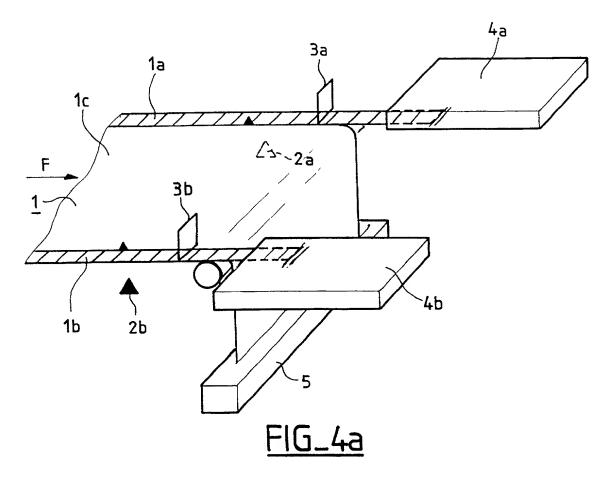
2Ь

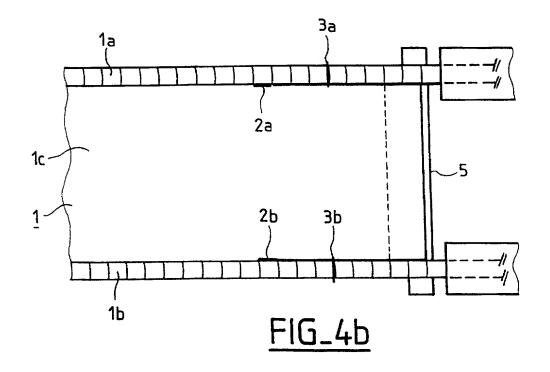
FIG_2b

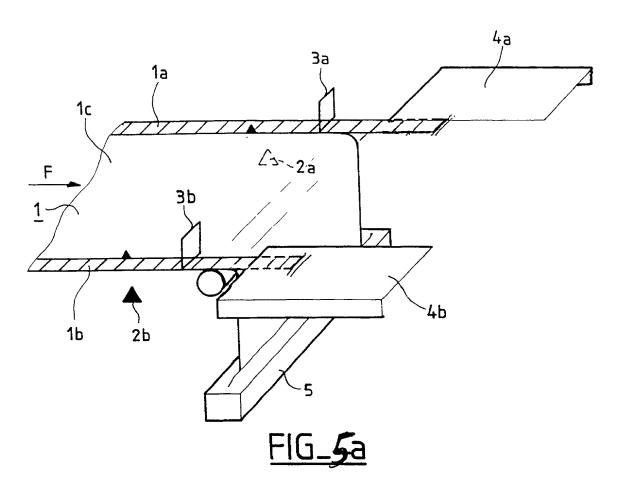


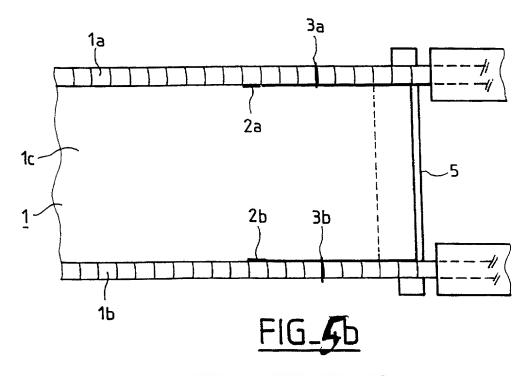




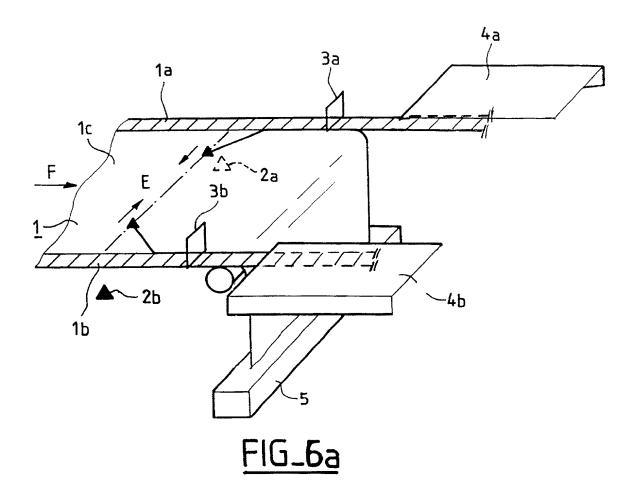


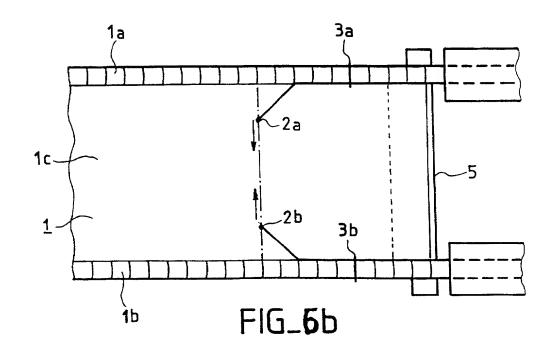


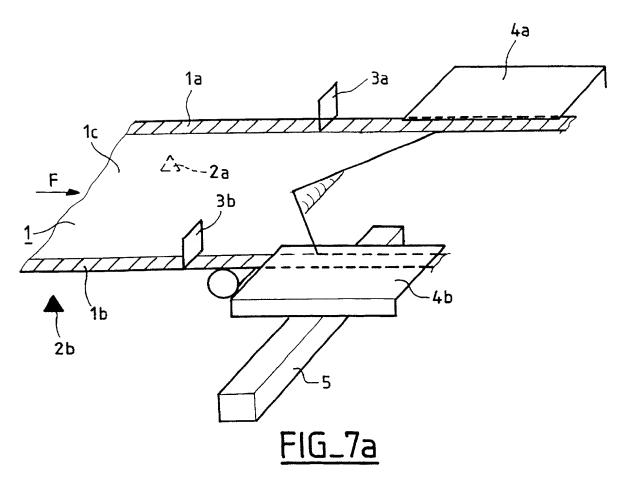


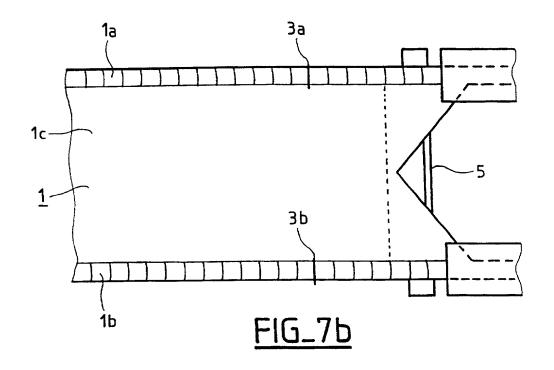


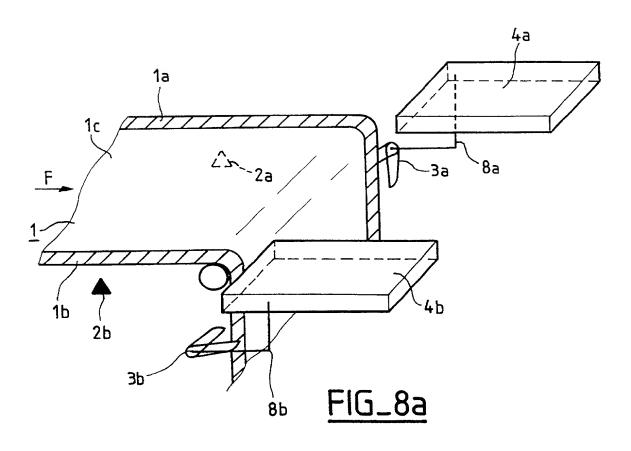
SUBSTITUTE SHEET (RULE 26)

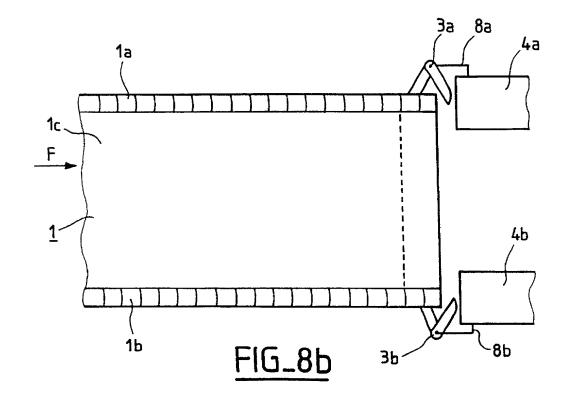


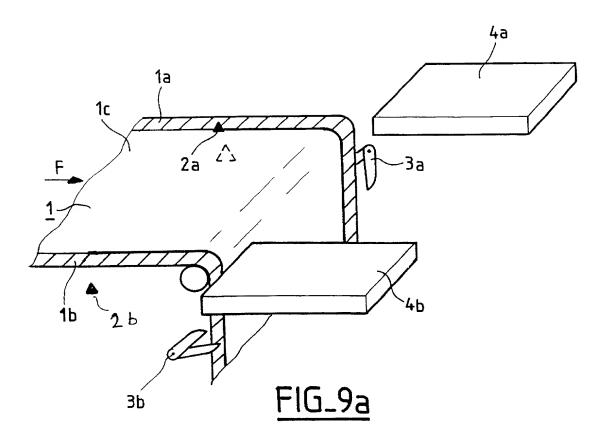


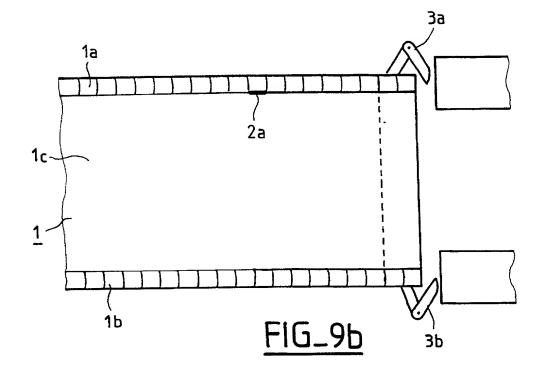


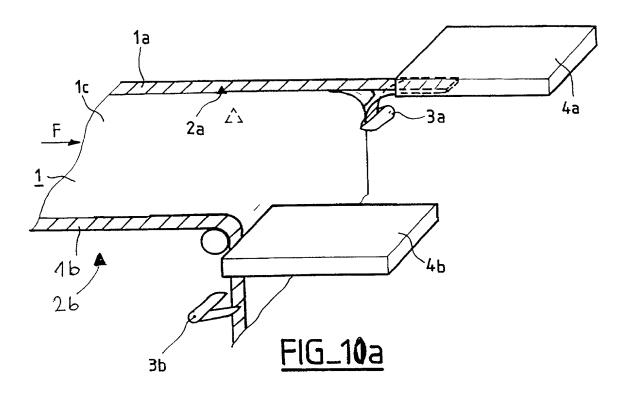


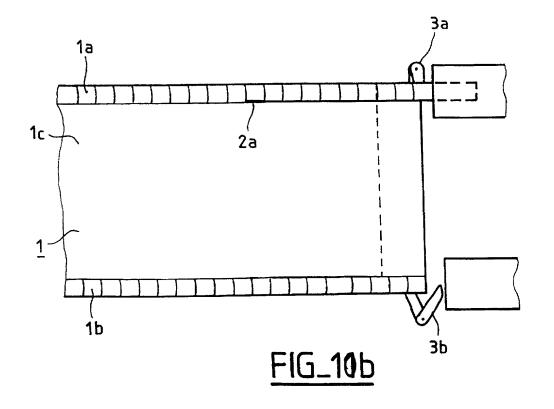


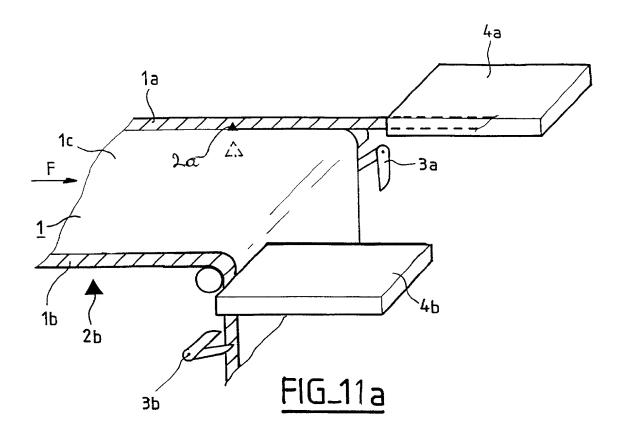


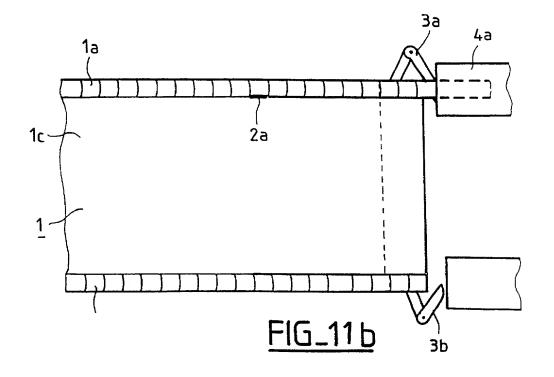


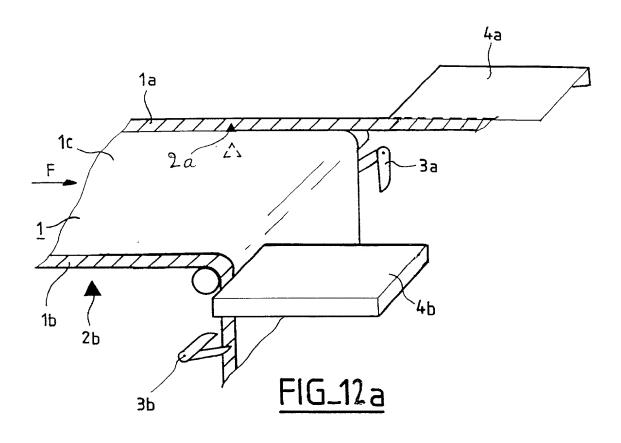


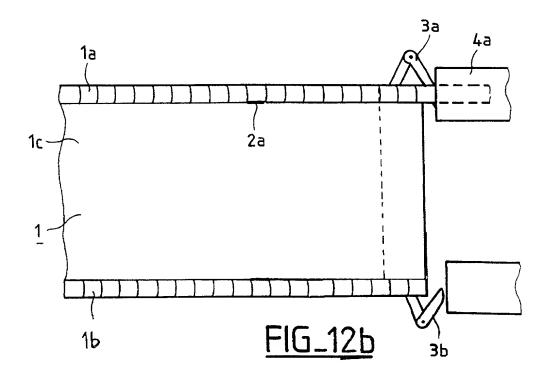


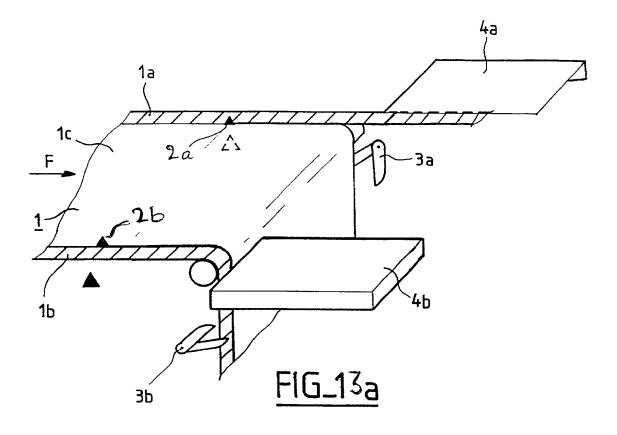


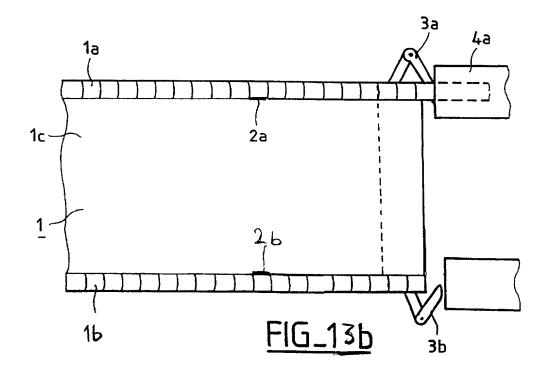


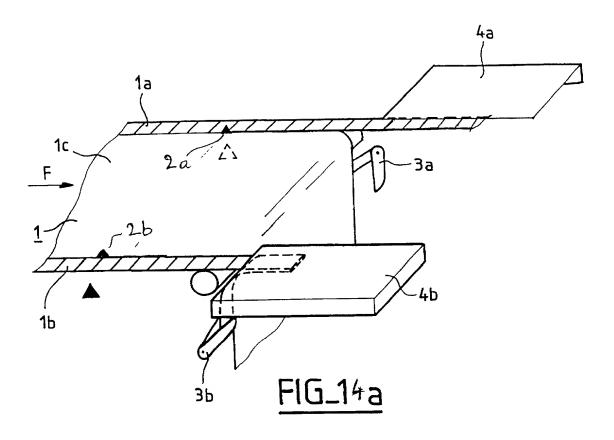


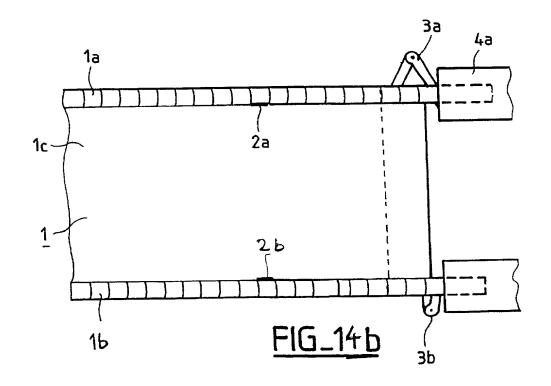


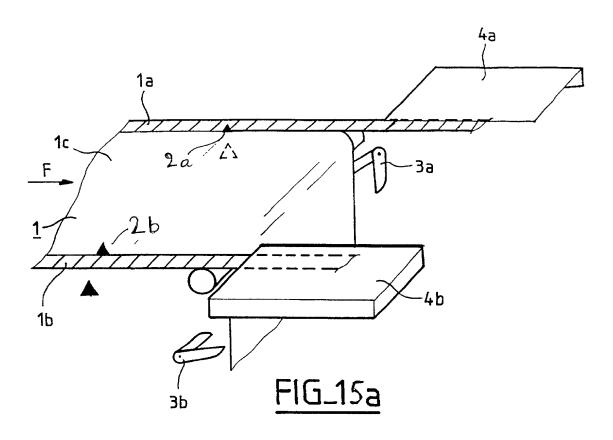


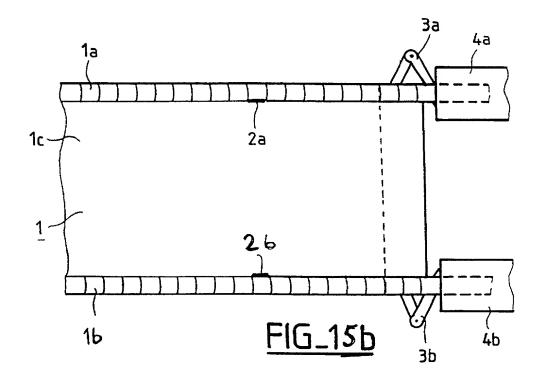


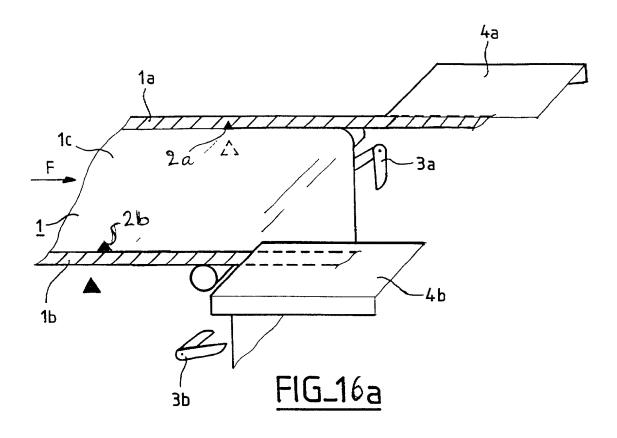


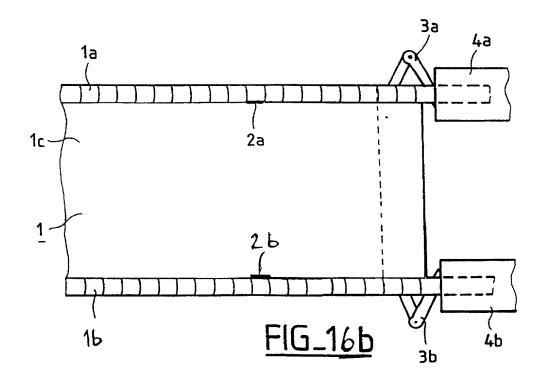


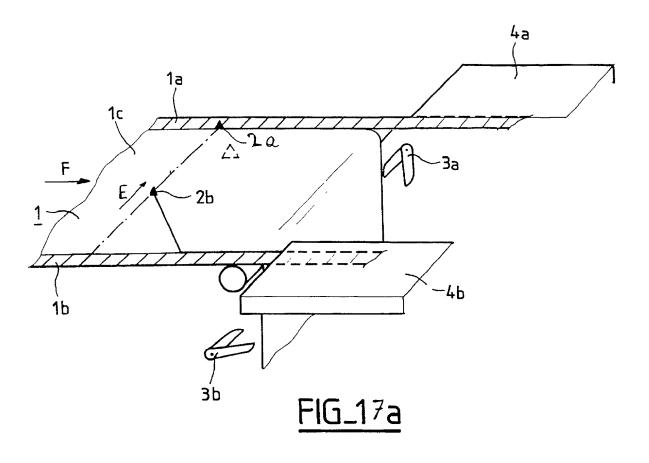


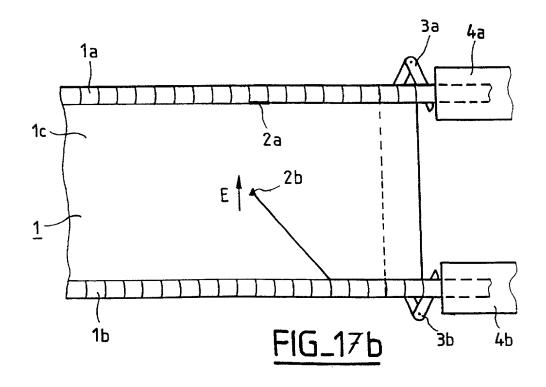


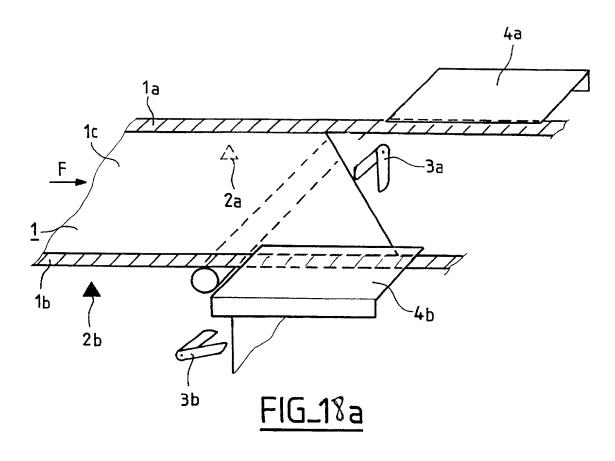


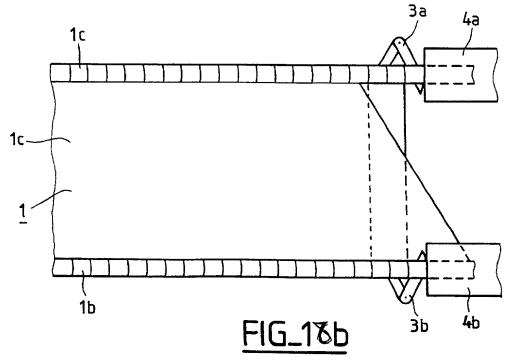




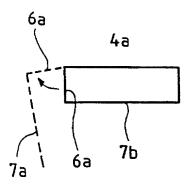


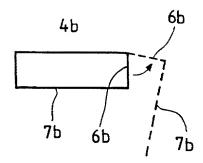












FIG_19

GENERAL POWER OF ATTORNEY

(Concerning Several International Patent Applications)

The undersigned, Vernon R. Rice, Vice President and Assistant General Counsel of E. I. DU PONT DE NEMOURS AND COMPANY, 1007 Market Street, Wilmington, Delaware 19898 USA ("DuPont"), hereby confirms that the power to sign for DuPont has been granted to various individuals (as set forth in the attached excerpt from DuPont's Patent Board Rules of Procedure (January 1988), Appendix Section III.A.4), including the Chairman, Vice-Chairman, and those individuals who are Assistant Secretaries of the Patent Board. Currently these Assistant Secretaries are:

Roger A. Bowman Linda J. Davis John E. Griffiths Miriam D. Meconnahey Dorothy W. Shafer Deborah A. Meginniss

In addition, the authority to act on behalf of DuPont before the competent International Authorities in connection with any and all international patent applications filed by it with the United States as Receiving Office and to make or receive payments on its behalf is hereby granted to:

Beardell, Lori Y.	34,293	Katz, Elliott A.	26,396
Belopolsky, Inna	43,319	Kelly, Patricia L.	39,247
Benjamin, Steven C.	36,087	King, Karen K.	34,850
Birch, Linda D.	38,719	Kuller, Mark D.	31,925
Bowen, Jr., Alanson G.	24,027	Krukiel, Charles E.	27,344
Christenbury, Lynne M.	30,97 <u>1</u>	Jarnholm, Arne R.	30,396
Cotreau, William J.	36,490	Langworthy, John A.	32,255
Deitch, Gerald E.	30,457	Lerman, Bart E.	31,897
Deshmukh, Sudhir	33,677	Levitt, Cary A.	31,848
Dobson, Kevin S.	40,296	Magee, Thomas H.	27,3 <u>55</u>
Duffy, Roseanne R.	33,869	Mayer, Nancy S.	29,190
Edwards, Mark A.	39,542	Medwick, George M.	27,456
Estrin, Barry	26,452	Morrissey, Bruce W.	30,663
Evans, Craig H.	31,825	Santopietro, Lois A.	36,264
Fair, Tamera L.	35,867	Schaeffer, Andrew L.	33,605
Feltham, S. Neil	36,506	Sebree, Chyrrea J.	45,348
Floyd, Linda Axamethy	33,692	Shafer, Robert J.	24,437
Frank, George A.	27,636	Shay, Lucas K.	34,724
Golian, Andrew G.	25,293_	Shipley, James E.	32,003
Gorman, Thomas W.	31,959	Siegell, Barbara C.	30,684
Gould, David J.	25,338	Sinnott, Jessica M.	34,015
Griffiths, John E.	32,647	Steinberg, Thomas W.	37,013
Hamby, Jane O.	32,872	Stevenson, Robert B.	26,039
Hamby, William H.	31,521	Strickland, Frederick D.	39,041
Heiser, David E.	31,366	Tessari, Joseph A.	32,177
Hendrickson, John S.	30,847	Tulloch, Rebecca W.	36,297
Jones, Brian C.	37,857	Walker, P. Michael	32,602
Joung, J. Kenneth	41,881	Wang, Chen	38,650

The undersigned ratifies fully all actions already taken by the above-named individuals in accordance with the authority granted hereby.

E. I. DU PONT DE NEMOURS AND COMPANY

Vice President and Assistant General Counsel

Date: 5 ... 5346

DECLARATION and POWER OF ATTORNEY

Signature (please sign full name): City	As a below-named inventor, I hereby declare that:									
Delivered smm the original, first and sole inventor if only one name is bladed belowy of me inventor interitied:	My residence, post	office address and cit	tizenship are as	stated l	pelow next to my	name				
the specification of which is attached betwood unless the following box is checked: was filled on February 5, 1999 as US. Application No. Critical Poly 1997 and was amended on Crisposablo. Increby start that howe previous and understand the contents of the above identified specification, including the claims, as amended by any anisotromic february 5 and was amended on Crisposablo. Increby start that howe previous minimum to which is favore to me to be material to putambility as defined in 37 CFR § 1.56. Increby claim foreign priority benefits maker 35 US.C. § 119(6)-67 or § 35(9) of any portugin application (a) for patient or invention's certification of a \$65(a) of any PCT International application which designated at least one country. Filling Date Priority Claimed (Yes/No) Yes 1044 0.04.26.7 EP 20 FEBRUARY 1998 Yes 1045 0.04.26.7 SEP 20 FEBRUARY 1998 Yes 1045 0.05 Provision No. Cuatry Filling Date Priority Claimed (Yes/No) Yes 1045 0.05 Provision Application No. U.S. Provisional No. U.S. Pro	I believe I am the o	riginal, first and sole	inventor (if onl	y one n	ame is listed belo	w) or an original fire	at and	ioint inventor (if plura	names are	
the specification of which is attached betwood unless the following box is checked: was filled on February 5, 1999 as US. Application No. Critical Poly 1997 and was amended on Crisposablo. Increby start that howe previous and understand the contents of the above identified specification, including the claims, as amended by any anisotromic february 5 and was amended on Crisposablo. Increby start that howe previous minimum to which is favore to me to be material to putambility as defined in 37 CFR § 1.56. Increby claim foreign priority benefits maker 35 US.C. § 119(6)-67 or § 35(9) of any portugin application (a) for patient or invention's certification of a \$65(a) of any PCT International application which designated at least one country. Filling Date Priority Claimed (Yes/No) Yes 1044 0.04.26.7 EP 20 FEBRUARY 1998 Yes 1045 0.04.26.7 SEP 20 FEBRUARY 1998 Yes 1045 0.05 Provision No. Cuatry Filling Date Priority Claimed (Yes/No) Yes 1045 0.05 Provision Application No. U.S. Provisional No. U.S. Pro	instea below) of the	subject matter which	n is claimed and	for wh	ich a patent is sou	ight on the invention	entitle	xd:	i imilies are	
the specification of which is attached bertou unless the following box is checked: was field on February 5, 1999 as U.S. Application No. PCTFP9900758 and was amended on organization of the property of the property of the property state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above. I acknowledge the dary to disclose information which is known to me to be material to patentiability as defined in 37 CFR § 1.56. Thereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment recipient priority benefits under 35 U.S. C. § 19164 (of a 5 & 5 & 5) (of any Ursian splication) for practice of a travellor's certificate, or PCT international application which designated at least one country other than the United States, listed below and have also date before that of the echiege the box, any foreign application for the echiege the box, any foreign application for the echiege the box, any foreign application or Wountry is claimed. Application No. Priority Claimed (Yes/No) Priority Claimed (Yes/No) Yes I hereby claim the benefit under 35 U.S. C. § 100 env. United States application(s) or § 365(c) of any Ursian States application or States and States and States application or States (and the prior application or Wountry and States application or States (and States and States application or States (and States and States and States and States application or States (and States and	APPAKAT	S AND METH	IOD FOR (CUIT	ING OF A	WEB, FEEDIN	$\mathbf{G}\mathbf{I}$	Γ INTO A PRO	CESSING	
we spieche of the properties				IND	THREADIN	C IT IIP THE	OUG	H THAT LINE		
Thereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any armoniment returned to above. I amonimize returned to above. I amonimize returned to above. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day of the above the day of the paregraph of 35 U.S.C. § 1120 of any United States application of the claims of the above day of the prior phylication and the national Application in the manner provided by the first paragraph of 35 U.S.C. § 1120 of any United States application or PCT International Application in the manner provided by the first paragraph of 35 U.S.C. § 112 acknowledge the brilling date of the prior upday and of the prior upday of	the specification of	which is attached her	reto unless the f	ollowin	g box is checked	•			1	
Thereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any armoniment returned to above. I amonimize returned to above. I amonimize returned to above. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56. I amonimize the day of the above the day of the paregraph of 35 U.S.C. § 1120 of any United States application of the claims of the above day of the prior phylication and the national Application in the manner provided by the first paragraph of 35 U.S.C. § 1120 of any United States application or PCT International Application in the manner provided by the first paragraph of 35 U.S.C. § 112 acknowledge the brilling date of the prior upday and of the prior upday of	was filed on	February 5, 19	999 as U.i	S. Appl	ication No.	or F	CT Inte	ernational Application	No	
Content of the content of the above identified specification, including the claims, as a smeaded by any activation of the content of the above identified specification, including the claims, as a smeaded by any Lexibus more contents of the above identified specification, including the claims, as a smeaded by any Lexibus more contents of the application information which is known to me to be material to patentability as defined in 37 CFR § 1.56. Dereley claim forcing princip benefits under 35 U.S.C. § 119(a) (d) or § 365(b) of any foreign applications) for patent or inventior's certificate, or state of the application of the application on which princip is claimed. Application No. Country Filing Date Priority Claimed (Yes/No) Yes	PCT/E	P99/00758 and	was amended o	n	(1	fannlicable)			110.	
Jacknowledge the day to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56.	1 nereby state mat 1	nave reviewed and it	inderstand the co	ontents	of the above iden	tified specification i	ncludi	ng the claims, as amer	dad by ony	
or \$ 35(0) of any PCT International applications which is provided at least one country other than the United States, listed below and have also date before that of the application on which priority is claimed for patent or investor's certificate, or PCT International application having a filting date before that of the application on which priority is claimed. Filing Date Priority Claimed (Yes/No) 98 40 04 26, 7 EP 20 FEBRUARY 1998 Priority Claimed (Yes/No) Yes I hereby claim the benefit under 35 U.S.C. § 129 of any United States Provisional Application(s) listed below. U.S. Provisional Application No. U.S. Filing Date Priority Claimed (Yes/No) Yes I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) or § 365(c) of any PCT International Application designating the United States application or PCT International Application in the manner provided by the claims of fine application is not disclosed in the priority of the priority to disclose information which is known to me to be material to patentability as defined in 75 CTR § 1.56 which became a valuable belowed the filing date of the prior application and the national or PCT International filing date of this application. Filing Date FOWER OF ATTORNEY: Thereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all lusiness in the Patent and Tradenark Office connected therewith Senior Company Legal States (Senior States) Senior Company Legal States (Senior States) Filing Date For No. E. L. du Pont de Nemours and Company Legal States (Senior States) Tel. No. (302) 892-0747 Fax No. (302) 892-0747 Fax No. (302) 892-7747 Fax No. Fax No. (302) 892-7747 Fax No. Fax No. Fax No. Fax No. Fax	annonament Lett	miga to above.							idea by arry	
or \$ 35(0) of any PCT International applications which is provided at least one country other than the United States, listed below and have also date before that of the application on which priority is claimed for patent or investor's certificate, or PCT International application having a filting date before that of the application on which priority is claimed. Filing Date Priority Claimed (Yes/No) 98 40 04 26, 7 EP 20 FEBRUARY 1998 Priority Claimed (Yes/No) Yes I hereby claim the benefit under 35 U.S.C. § 129 of any United States Provisional Application(s) listed below. U.S. Provisional Application No. U.S. Filing Date Priority Claimed (Yes/No) Yes I hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s) or § 365(c) of any PCT International Application designating the United States application or PCT International Application in the manner provided by the claims of fine application is not disclosed in the priority of the priority to disclose information which is known to me to be material to patentability as defined in 75 CTR § 1.56 which became a valuable belowed the filing date of the prior application and the national or PCT International filing date of this application. Filing Date FOWER OF ATTORNEY: Thereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all lusiness in the Patent and Tradenark Office connected therewith Senior Company Legal States (Senior States) Senior Company Legal States (Senior States) Filing Date For No. E. L. du Pont de Nemours and Company Legal States (Senior States) Tel. No. (302) 892-0747 Fax No. (302) 892-0747 Fax No. (302) 892-7747 Fax No. Fax No. (302) 892-7747 Fax No. Fax No. Fax No. Fax No. Fax	I hardy alaire for	luty to disclose inform	mation which is	known	to me to be mate	rial to patentability a	s defir	ned in 37 CFR § 1.56.		
date before that of the application on which priority is claimed. Application No. Country Filing Date Priority Claimed (Yes/No) 28 4 0 0 4 2 6 7 7 EP 20 FEBRUARY 1998 Yes Thereby claim the benefit under 35 U.S.C. § 119(e) of any United States Provisional Application(s) listed below. U.S. Provisional Application No. U.S. Fliling Date U.S. Provisional Application (S) U.S. Provisional Application (S) U.S. Fliling Date U.S. Fliling Date Proving Vision (S) U.S. Fliling Date U.S. Fliling Date Proving Vision (S) U.S. Fliling Date U.S. Fliling Date Fliling Date Status (platented, pending or abandoned) Proving Vision (S) Fliling Date Status (platented, pending or abandoned) Proving Vision (S) Fliling Date Status (platented, pending or abandoned) Proving Vision (S) Fliling Date Status (platented, pending or abandoned) Proving Vision (S) Fliling Date Status (platented, pending or abandoned) Proving Vision (Platented) Fliling Date Status (platented, pending or abandoned) Proving Vision (Platented) Fliling Date Status (platented, pending or abandoned) Fliling Date Status (platented, pending or abandoned) Proving Vision (Platented) Fliling Date Status (platented, pending or abandoned) Fliling Date Status (platented, pend	or § 365(a) of any I	CT International and	inger 35 U.S.C.	§ 119(a	i)-(d) or § 365(b)	of any foreign applic	ation(s) for patent or invento	or's certificate,	
Application No. Country EP 20 FEBRUARY 1998 Yes Thereby claim the benefit under 35 U.S.C. § 119(e) of any United States Provisional Application(s) listed below. U.S. Provisional Application No. U.S. Printing Date Brighted Land States application of PCT International Application in the designating the United States subject under of each of the claims of this supplication in the designating the United States application or PCT International Application in the manner provided by the first paragraph of 35 U.S.C. § 112 acknowledge the ditty to disclose information which is known to me to be material to patentability as defined in 37 CER § 1.36 which became available between the filing date of the prior application and the national or PCT International filing date of this application. Filing Date Status (patented, pending or abandoned) FOWER OF ATTORNEY: I hereby appoint the following attomety(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Transact all research of the prior application and direct telephone calls to: EM ANDREW G. GOLIAN Egal-Patents Wilmington, DE 19898, U.S.A. (302) 892-0747 Fax No. (302) 892-0747 Fax No. (302) 892-0747 Fax No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare the time the set statements were made with the knowledge that willing lake statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willing lake statements made the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements made the recent of the patent of the validity of the application or any patent issuing thereon. INVENTOR(S) Full Name of Inventor 1—C PRETITIEAN First Name of Inventor 2—C ANDEL ANDREW L.	identified below, by	checking the box, ar	ny foreign appli	cation f	or patent or inver	ntor's certificate, or P	Onited CT Int	1 States, listed below a temational application	nd have also	
Profit Continue Profit Profit Continue Profit Pro	mand outload tille of	tic application on with	ien priority is ci	aimed.						
Interest Country Country Country Country Country Country Citzenship City Citzenship City Citzenship City Citzenship City Citzenship City Citzenship City Citzenship City Country of Citzenship City Color Citzenship City Color Citzenship City Color Citzenship City Color Country of Citzenship City Color Citzenship City Color City Color Citzenship City Color City City Color City City Color City Color City Color City Color City Color City City Color City Color City City Color City City Color City City Color City Color City Color City City Color City City City Color City	* *		-				Priority Claimed (Yes/No)			
U.S. Provisional Application No. U.S. Filing Date U.S. Provisional Application No. Designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior of designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior of United States application or PCT International Application in 17 CFR 5 112, I acknowledge the duly to disclose information which is known to ne to be material to patentability as defined in 37 CFR 5 112, I acknowledge the thick of the prior application and the national or PCT International filing date of this application. PROVER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith Registration No. ANDREW G. GOLIAN Registration No. L. du Port de Nemours and Company (302) 892-0747 [22] ANDREW G. GOLIAN Registration No. L. du Port de Nemours and Company (302) 892-0747 [23] Patents Wilmington, DE 19898, U.S.A. [302) 892-7343 [302) 892-7343 [302) 892-7343 [302) 892-7343 [302) 892-7343 [302) 892-7343 [303) 892-7343 [304) 892-7343 [305) 892-7343 [306) 892-7343 [307) 892-7343 [308) 892-7343 [309) 892-7343 [309) 892-7343 [300) 892-7343 [300) 892-7343 [300) 892-7343 [301) 892-7343 [302) 892-7343 [303) 892-7343 [303) 892-7343 [304) 892-7343 [305] 892-7343 [307) 892-7343 [308) 892-7343 [309) 892-7343 [309) 892-7343 [300) 892-7343 [300) 892-7343 [300) 892-7343 [300) 892-7343 [300) 892-7343 [301) 892-7343 [301) 892-7343 [302) 892-7343 [303) 892-7343 [303) 892-7343 [303) 892-7344 [304) 892-7343 [305] 892-7343 [306] 892-7343 [307) 892-7343 [308) 892-7343 [309) 892-7343 [309) 892-7343 [309) 892-7			EP	20) FEBRUAR	Y 1998		Yes		
ilbereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International Application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application or PCT International Application in the manner provided by the first paragraph of 35 U.S.C. § 11.2 nacknowledge the dilty to disclose information which is known to me to be material to patentability as defined in 37 CFR § 1.56 which became available between the filling date of the prior application and the national or PCT International filling date of this application. Application No. Filing Date Status (patented, pending or abandoned) FOWER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name ANDREW G. GOLIAN Registration No. E. L. du Pont de Nemours and Company Legal - Patents Willington, DE 19898, U.S.A. Fax No. (302) 892-0747 Fax No. (302) 892-0747 Fax No. (302) 892-7343 Ilbereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are point shale by fine or imprisonment, or both, under Section 100 1 of Title 18 of the United States Code and that such willful false statements may ieopardize the validity of the application or any patent issuing thereon. Foll Name of Inventor 1-cc PETITIEAN Signature (please sign full name) INVENTOR(S) First Name Of Inventor 2-cc MARNACH Signature (please sign full name) Luxembourg State or Foreign Country Luxembourg Luxembourg Luxembourg Luxembourg State	I hereby claim the t	enefit under 35 U.S.	C. § 119(e) of a	ny Unit	ed States Provision	onal Application(s) li	sted b	elow.		
POWER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name: ANDREW G. GOLIAN Registration No. 25,293 Send correspondence and direct telephone calls to: Late Pont de Nemours and Company Legal-Patents Wilmington, DE 19898, U.S.A. Fax No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare that all statements made herein of my own knowledge are true and that all statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may incorporate the validity of the application or any patent issuing thereon. INVENTOR(S) Full Name Of Inventor 1 CC PETITIEAN Signature (please sign full name): Signatu		U.S. Provisional	Application N	0.			U.S.	Filing Date		
POWER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name: ANDREW G. GOLIAN Registration No. 25,293 Send correspondence and direct telephone calls to: Late Pont de Nemours and Company Legal-Patents Wilmington, DE 19898, U.S.A. Fax No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare that all statements made herein of my own knowledge are true and that all statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may incorporate the validity of the application or any patent issuing thereon. INVENTOR(S) Full Name Of Inventor 1 CC PETITIEAN Signature (please sign full name): Signatu	I hereby claim the b	enefit under 35 U.S.	C 8 120 of any	United	States application	2(c) or 8 365(a) of or	w DC1	C'Yatamatian 1 A. 1:	A:	
POWER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name: ANDREW G. GOLIAN Registration No. 25,293 Send correspondence and direct telephone calls to: Late Pont de Nemours and Company Legal-Patents Wilmington, DE 19898, U.S.A. Fax No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare that all statements made herein of my own knowledge are true and that all statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may incorporate the validity of the application or any patent issuing thereon. INVENTOR(S) Full Name Of Inventor 1 CC PETITIEAN Signature (please sign full name): Signatu	designating the Uni	ted States, listed belo	w and, insofar a	as the si	bject matter of e	ach of the claims of t	his ap	nternational Applica	tion ed in the prior	
POWER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name: ANDREW G. GOLIAN Registration No. 25,293 Send correspondence and direct telephone calls to: Late Pont de Nemours and Company Legal-Patents Wilmington, DE 19898, U.S.A. Fax No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare that all statements made herein of my own knowledge are true and that all statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may incorporate the validity of the application or any patent issuing thereon. INVENTOR(S) Full Name Of Inventor 1 CC PETITIEAN Signature (please sign full name): Signatu	United States applied	cation or PCT Interna	tional Applicati	on in th	ne manner provide	ed by the first paragr	ph of	35 U.S.C. § 112, I ack	nowledge the	
POWER OF ATTORNEY: I hereby appoint the following attorney(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name: ANDREW G. GOLIAN Registration No. 25,293 Send correspondence and direct telephone calls to: Late Pont de Nemours and Company Legal-Patents Wilmington, DE 19898, U.S.A. Fax No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare that all statements made herein of my own knowledge are true and that all statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may incorporate the validity of the application or any patent issuing thereon. INVENTOR(S) Full Name Of Inventor 1 CC PETITIEAN Signature (please sign full name): Signatu	the filing date of the	prior application and	d the national or	r PCT I	ai to patentability	as defined in 3 / CF	K§ L:	66 which became avail	able between	
POWER OF ATTORNEY: I hereby appoint the following attomey(s) and/or agent(s) the power to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: Name: ANDREW G. GOLIAN Send correspondence and direct telephone calls to: Lat Pont de Nemours and Company Legal - Patents Wilmington, DE 19898, U.S.A. Tel. No. (302) 892-0747 Fax No. (302) 892-7343 Thereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are beforeved to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are purishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may investment the validity of the application or any patent issuing thereon. Foll Name of Inventor 1 - C PETITIEAN Signature (please sign full name): Signature (please sign f	Application No.	* **		Filin	g Date	State	ion. Is (nat	ented nending or sh	andoned)	
Send correspondence and direct telephone calls to: Contract C							•	/ 1		
Send correspondence and direct telephone calls to: Contract C	POWER OF ATT	ORNEY: I hereby a	ppoint the follow	wing att	omey(s) and/or a	gent(s) the power to	prosec	ute this application an	d transact all	
Send correspondence and direct telephone calls to: L. L. du Pont de Nemours and Company Legal-Patents Wilmington, DE 19898, U.S.A. (302) 892-0747				herewi	th:					
L. du Pont de Nemours and Company (302) 892-0747 Fax No. (302) 892-0744 Fax No. (302) 892-0744 Fax No. (302) 892-07343	Name: ANDR	EW G. GOLIAI	N			Registration No	25,2	93	i	
ANDREW G. GOLIAN Legal Patents Country Country of Citizenship City Country of Citizenship City City City City City City City City City Country of Citizenship City City Country of Citizenship City City Country of Citizenship City City Country of Citizenship City Cit	Send correspondent	ce and direct						Tel. No.		
ANDREW G. GOLIAN Wilmington, DE 19898, U.S.A. Fax No. (302) 892-7343 Figure 19898, U.S.A. Figure 19898, U.S.A. Figure 19898, U.S.A. Figure 19898, U.S.A. Fax No. (302) 892-7343 Fax No. (302) 892-7343 Figure 19898, U.S.A. Figure 1989, U.S.A. Figure 198	The state of the s			<u>E. L. du</u>	Pont de Nemou	rs and Company				
Country of Citizenship City State or Foreign Country Country of Citizenship City	ANDR	EW G GOLIAN	ν :	<u>Legal -</u> Wilmir	Patents	ETISA		` ′		
Thereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may icopardize the validity of the application or any patent issuing thereon. INVENTOR(S)		LW G. GOLIM	.2	1. MINITA	igion, DE 17070	5 U.S.A.				
penered to be true, and nurther that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon. INVENTOR(S)	Thereby declare tha	t all statements made	herein of my o	van kno	wledge are true a	nd that all statements	mode	(302) 692-1343	liefore	
State or Foreign Country State or Country State or Country State or First Name Middle Name Signature (please sign full name): State or Foreign Country State or Country Country of Citizenship Luxembourg	believed to be true;	and further that these	e statements wer	re made	with the knowle	dge that willful false	staten	ents and the like so m	ade are	
INVENTOR(S)	punishable by fine	or imprisonment, or b	oth, under Sect	ion 100	1 of Title 18 of th	ne United States Code	and t	hat such willful false s	tatements may	
Last Name Signature (please sign full name): State or Foreign Country State or Country of Citizenship City State or Foreign Country State or State or State or Country State or Sta	jeopardize the vare	ity of the application	or any patent is	sunig u		\		·····		
Signature (please sign full name): Residence & City State or Foreign Country BELGIUM Residence & City State or Foreign Country BELGIUM Residence & City State or Foreign Country Residence & City State or Foreign Country LAMADELAINE LUXEMBOURG Full Name of Inventor 3 - Country State or Country State or Country State or Country Country of Citizenship Last Name First Name Last Name of Inventor 3 - Country State or Countr	Full Name	Last Name	*****			<i>,</i>	I M	iddle Name		
Citizenship ARLON Sex BELGIUM BE	of Inventor 1 - CC				CHIES		1 11	radic rame		
Citizenship ARLON Sex BELGIUM BE		Signature (please sign	full name):	11:	Gille s	Petition	D	ate: †a. 16)	20-1	
Citizenship ARLON Sex BELGIUM BE	Residence &	City		=	State or Foreign C	ounter/	- -	ountry of Citizenshin	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Address 70, RUE DE VALLON ARLON BELGIUM B-6700 Full Name of Inventor 2 - MARNACH Signature (please sign full name): Residence & City LAMADELAINE LUX State or Foreign Country LUXEMBOURG City LUXEMBOURG City State or Country Country of Citizenship LU State or Country Citizenship LUXEMBOURG First Name of Inventor 3 - Country Signature (please sign full name): Residence & City Signature (please sign full name): Signature (please signature (please signature name full name): Signature (please signature name full name): Sig	Citizenship		×	7		Cumity	B	SE		
Last Name Griventor 2 - Country Country of Citizenship Lamade City Citizenship Last Name City Lamade City Citizenship Last Name City Citizenship Last Name	Post Office				City	,				
Signature (please sign full name): State or Foreign Country Country of Citizenship			LLON						B-6/00	
Signature (please sign full name): Joseph HARNACH Jan Local										
Residence & City LAMADELAINE LUX EMBOURG Post Office Address Address Full Name of Inventor 3 - co NICOLAI Signature (please sign full name): Residence & City Last Name NICOLAI Signature (please sign full name): City LOVICLED State or Foreign Country LUXEMBOURG LAMADELAINE LUXEMBOURG LUXEMBOURG L-4879 Full Name of Inventor 3 - co Nicolai Signature (please sign full name): City State or Foreign Country Marie Hubert Andre City Citizenship HEINSCH Post Office Address City State or Foreign Country Country of Citizenship BE Country of Citizenship Country of Citizenship BE State or Foreign Country State or Foreign Country State or Foreign Country BELGIUM BE State or Country State or Coun	0.11.01.01.2		full name):	1		11	15			
Citizenship LAMADELAINE Post Office Address 69, RUE DE LA MONTAGNE LAMADELAINE LAMADELAINE LAMADELAINE LAMADELAINE LUXEMBOURG LUXEMBOURG L-4879 Full Name of Inventor 3 NICOLAI Signature (please sign full name): Residence & City Citizenship HEINSCH Post Office Address City BELGIUM State or Country BELGIUM State or Country Country of Citizenship BE State or Country BELGIUM BE State or Country State or Country State or Country BELGIUM BE State or Country State or Country BELGIUM BE State or Country State or Country State or Country BELGIUM BE State or Country State or Country State or Country BELGIUM BE State or Country BE State or Country State or Country BE State or Country BE State or Country State or Country State or Country BE State or Country Stat	Doddono 4	194			JOS	CPHMARNA		San Mex	04	
Post Office Address 69, RUE DE LA MONTAGNE LAMADELAINE LUXEMBOURG L-4879 Full Name of Inventor 3 - co NICOLAI Signature (please sign full name): Residence & City Citizenship HEINSCH Post Office Address 492, ROUTE DE City LAMADELAINE LUXEMBOURG LUXEMBOURG L-4879 Middle Name Marie Hubert Andre Marie Hubert Andre Country of Citizenship BE City State or Foreign Country BELGIUM State or Country Citizenship BE State or Country State or Country State or Country State or Country BELGIUM BELGI										
Full Name of Inventor 3 - 00 NICOLAI First Name LUC MARIE HUBERT ANDRE Signature (please sign full name):	Post Office			***************************************		NO			Zip Code	
of Inventor 3 - 00 NICOLAI LUC MARIE HUBERT ANDRE Signature (please sign full name): Residence & City Citizenship HEINSCH Post Office Address Post Office Address 492, ROUTE DE NARIE HUBERT ANDRE Date: J. M. C. J. M. C. J. M. C. J. J. M.	The state of the s		MONTAGNI	E		INE	L	UXEMBÓURG		
Signature (please sign full name): Residence & City Citizenship HEINSCH Post Office Address Signature (please sign full name): City BELGIUM State or Foreign Country BELGIUM BE State or Country of Citizenship BE State or Country BELGIUM State or Country BELGIUM BELGIUM BELGIUM BELGIUM B-6700									NIDE	
Residence & City State or Foreign Country BELGIUM BE Post Office Post Office Address 492, ROUTE DE State or Foreign Country BELGIUM BELGIUM BELGIUM BELGIUM BELGIUM BELGIUM BELGIUM BEGOVERN	Signature (please sign full name):									
Residence & City State or Foreign Country BELGIUM Country of Citizenship Post Office Post Office Address City State or Country BELGIUM BELGIUM BELGIUM BELGIUM BELGIUM B-6700			Tun marie).	1-15				Jun 69,200	3 /	
Post Office Post Office Address City State or Country Zip Code Address 492, ROUTE DE HEINSCH BELGIUM B-6700	Residence & City State or Foreign Country						Country of Citizenship			
Address 492, ROUTE DE HEINSCH BELGIUM B-6700) CX						7in Codo	
NEUFCHATEAU			}							
	<u> </u>				-					

 $[\]square$ Additional Inventors are being named on separately numbered sheets attached hereto.